

WebQuests in Social Studies Education

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Abstract

WebQuests provide the opportunity to combine technology with educational concepts and to incorporate inquiry-based learning. WebQuests also have the ability to integrate on-line resources with student-centered, activity-based learning. Three courses in the College of Education at The University of Alabama and at West Virginia University incorporate WebQuests projects, both at the undergraduate and graduate levels. Students develop an online WebQuest and submit a paper copy and/or a URL to their instructor upon completion of the course. During an academic year, three professors in social studies graduate education received over 50 submissions of WebQuests projects from pre-service and in-service teachers enrolled in three courses. The grading rubric was developed by Bernie Dodge, the creator of WebQuests, but modified at The University of Alabama yielding a high rate of reliability (93.3%). This project assessed scores of WebQuests using this grading rubric in three separate classrooms. Comparisons between elementary and secondary level students, Filamentality users, and certified and non-certified teachers were analyzed for significance. The students had already received a grade for their projects through the academic class, but a separate grading system was developed to evaluate these projects and to provide insight into future research using WebQuests.

Introduction

WebQuests incorporate technology with educational concepts through integrating on-line resources with student-centered, activity-based learning. According to Sunal and Haas (2002), WebQuests are problem-solving activities for students that incorporate the Internet, computer-based materials, and other available resources. In social studies education, WebQuests provide the opportunity for students to actively engage in learning by connecting their interests with various content areas. Social studies educators, similar to those in other content areas, must adapt their instructional practices to accommodate the needs of their students. With increased accessibility to information due to the Internet, students are able to collect large amounts of information on a specific topic. Through a WebQuest assignment, a student is given a task to direct his/her inquiry within the content. This approach allows the instructor to

direct the student-centered learning experience without too much control over the process. In contrast to in-class assignments, WebQuest assignments also allow the student to interact with the material outside of class time. This helps to enhance the retention of information by connecting the student with the process of learning.

In order to effectively implement a WebQuest assignment, faculty must understand the various needs of each student involved. Each instructor must be able to understand the design and organization of a WebQuest as well as the student resources available to deliver the appropriate content. Many graduate students in teacher education programs are often exposed to technology in the classroom and may also develop WebQuests in these courses. These pre-service and in-service teachers are given instruction as well as resources to create their own project in a number of content areas, more specifically within social studies education. The purpose of this study is to assess the ability of graduate students in social studies education at the elementary or secondary level to develop WebQuests using a grading rubric. This study investigates the significance of mean scores on the grading rubric between elementary and secondary level students, Filamentality users, and certified and non-certified teachers.

Literature Review

From its inception in 1995 by Bernie Dodge and Tom March, San Diego State University, WebQuests have become an effective method of incorporating technology with educational concepts. In an interview, Dodge stated his intention for creating a WebQuest sparked from an interest in allowing his students to further connect with his in-class lesson (Starr, 2000b). Using his knowledge of educational technology, Dodge was able to gather information and resources online to support his lesson plans. His creation of a student-centered activity had the ability to integrate on-line resources with activity-based learning (Dodge, 1995). The development of higher-order thinking skills with content-based learning in the WebQuest format may prove to be successful, but further research is needed in this area. Tom March (2000), one of the co-developers, states that WebQuests “allow students to construct meaning on a complex topic, preferably in a way that motivates working together and testing ideas in a real world context” (p.55). March has been another major proponent of WebQuests in education and has contributed to the understanding of their use. His research addresses basic uses of WebQuests in scaffolding, prompting, and procedural facilitation with various content areas (March).

Although March (2000) states WebQuests have shown to be not as effective as learning-centered scaffolds when attempting to facilitate independent research, affective engagement, or concept attainment, other instructional technology methods can be utilized such as a Topic Hotlist, Knowledge Hunt, Subject Sampler, or Concept Builder. As classroom teachers develop many of these WebQuests, they are typically placed on the Internet at various sites for access. This allows students to search for their specific topic of interest on a number of sites such as The WebQuest Page Matrix, WebQuest Collections, Blue Web’n, and The WebQuest and other Internet Projects Webring site. In addition, various tools such as Filamentality have also been developed to allow teachers to create low-graphic WebQuest assignments (“SBC Communications,” 2004). According to the Filamentality Homepage, “Filamentality is

a fill-in-the-blank tool that guides you through picking a topic, searching the Web, gathering good Internet links, and turning them into learning activities” (“SBC Communications,” 2004, Filamentality, ¶ 1). Teachers also have the option of developing WebQuest activities with Filamentality, a less invasive process requiring less instruction.

Through appropriate planning and development, teachers are learning how to effectively implement lessons that facilitate inquiry-based learning (March, 2000; Lipscomb, 2003; Peterson, Caverly, & MacDonald, 2003; Starr, 2000a). This structured format shifts the focus to student-centered learning through instructor-facilitated instruction and guidance. Lipscomb (2003) investigated the implementation of WebQuest lessons in two eighth grade classrooms and analyzed the instruction given, resources made available, and their use of time during the activity. As many students had no prior experience with WebQuests, each instructor was required to provide an orientation session for each class. In Lipscomb’s investigation, the class participated in a Civil War WebQuest project that motivated the students to browse the primary and secondary Internet sources. Upon completion of their research, each student was asked to write several journal entries on his/her experience. The result of this project yielded more creative journal responses using information gathered in the WebQuest lesson than those resulting from other teaching formats. Students were able to develop more of a meaningful understanding of the topic due to the instructors’ ability to provide a more inclusive experience, such as WebQuests that allow the student to have personal connection with the material (Lipscomb). Successful implementation of WebQuests, particularly in social studies education, lends credibility to the simplicity of the concept – increasing student learning through active experimentation.

This implementation of WebQuests in various other fields of study continues to make a major impact on the instructional strategies employed by faculty (Seamon, 2001; Lipscomb, 2003; Peterson et al., 2003). In addition, the concept of Internet discovery has improved the ability of the student to construct his/her own learning through WebQuest activities (Seamon, 2001). Essential in this process of discovery is the instructor’s ability to create effective navigation through a web page storyboard. In this process the instructor is able to create a flowchart to identify the natural progression a student will follow through a WebQuest project. Ease of navigation is one of the most central concepts that must be implemented in order to facilitate online learning (Seamon). In this process an instructor must guide a student from question, search, interpretation, composition, and sharing to take the online information and synthesize a meaningful output. This discovery method promotes ownership of the student’s learning and Seamon suggests incorporating a writing activity upon completion of the WebQuest to allow students the opportunity to reflect on their findings. According to Lipscomb (2003), this activity is “gaining popularity with teachers and students for its ability to interact with on-line resources” and connect it to writing activities (p.152). Scott (2000) also discusses similar findings of connecting with the material through research, synthesizing, and information writing. This is particularly important in connecting with the material in social studies education. As Lipscomb states students will “develop more meaningful ideas of the past if it is personalized,” and this concept is highly relevant for historical events and people (p.154).

Similar to social studies education, other fields of study including science, mathematics and English have incorporated WebQuests to facilitate higher order thinking skills. King (2003) investigated the impact of WebQuests in science education at the 6th grade level utilizing pre-service and in-service teachers. Through outcomes-based research this project utilized a university level course that investigated the effectiveness of the WebQuests developed. These pre-service and in-service teachers were asked to develop science based WebQuest projects during one semester in an in-class course. The Micro-computer Utilization in Teaching Beliefs Instrument (MUTEBI) instrument was used to measure the technology efficacy and outcomes expectancy (King). Using a control and experimental group of 6th grade students, the pre-service and in-service teachers were asked to implement WebQuest lessons to the experimental group only. The MUTEBI instrument did not yield any statistical significance in the technology efficacy of the pre-service and in-service teachers in the control or the experiment.

Similarly, Crawford and Brown (2002) investigated the development of higher order thinking skills using WebQuests in mathematics in education. Using Bloom's Taxonomy, this study evaluated higher order thinking skills (HOTS) which included content-based thinking, critical thinking, and cognitive thinking (Crawford & Brown). Suggestions from this study using WebQuests in mathematics included the application of real-world practices, learner-centered, and an emphasis on the learner's thinking process (Crawford & Brown). To develop HOTS within the mathematics curriculum the instructor must facilitate the learning process with the Internet. These HOTS were also implemented in Rozema's (2001) work with developing academic literacy through WebQuests. This study allowed students to analyze a number of literary passages based on writing style and format. Upon completion of their reading, the students were required to post messages on discussion boards in response to their reading. Rozema found this method conducive to creating academic literacy among students in a student-centered framework.

WebQuests continue to be a successful method of allowing the student to connect with material through online resources. The primary concern, as an instructor, regards setting up a problem or task for the student to accomplish. Setting up a task also requires adequate prompting to ensure that the student investigates the correct online references. Currently, much of the research published on WebQuests describes methods of implementing this tool into classroom instruction. Although instructors have developed most WebQuests, some research has revealed that student-developed WebQuests are also being implemented in classes (Peterson et al., 2003). This method of student-centered instruction relies on the technological ability of the students and the instructor in order to create an effective outcome, and remains in the infancy of WebQuest implementation.

Similar methods of approach may be implemented in social studies education based on the success in these other areas. As Lipscomb's (2003) research has demonstrated the ability of WebQuest to create learning for students with historical events and people, this method may continue to be assessed for effectiveness. Although King's (2003) work addresses the issue of technology effectiveness using an outcomes-based approach to investigation, his research did not yield any statistical significance based on the instrument. The errors in this research may be based on the instrument itself and not on the delivery of the instruction in the educational technology course.

Using WebQuests in social studies education with pre-service and in-service teachers may yield similar results to King's study with the MUTEBI instrument. Future analysis of WebQuest effectiveness may include additional evaluations of the product with the student's ability to integrate the activity into a classroom setting. An assessment of the WebQuest produced by pre-service and in-service teachers combined with additional evaluation with the course implementation may yield the most statistically significant results.

Method

This study attempts to assess the significance of total scores of WebQuest development by elementary and secondary teachers through a grading rubric. In addition comparisons were also made with the total scores and Filamentality users, certified and non-certified teachers. Three courses in the Colleges of Education at The University of Alabama and West Virginia University currently incorporate WebQuest projects, both at the undergraduate and graduate levels. Pre-service and in-service teachers enrolled in these courses develop an online WebQuest and submit a paper copy and/or URL to their instructor upon completion of the course. During an academic year, three professors in social studies graduate education graded over 46 paper and online WebQuest submissions from 38 students. Each instructor gave similar instructions to their students outlining the specific requirements for the assignment. All of the students were given a basic outline of the grading criteria as well as specific due dates for the WebQuest assignment.

The rubric was modified and continued to yield a high rate of reliability (93.3%) (Appendix A). This rubric was implemented as the main grading criteria for each WebQuest assignment. All three of the professors incorporated similar grading methods using the grading rubric. The nine sections of the rubric include: Frames the Essential Question, Follows Inquiry Process, Overall Visual Appeal, Connects Task to Academic Standards at Developmentally Appropriate Grade Level, Engaging Scenario & Tasks, Relevant Sources at Appropriate Grade Level for Students and Quality of Resources, Roles are Interesting and Create Dissonance, Clarity of Evaluation Criteria, Promotes the Use of Creativity. Grading for these sections included three categories with points for each: Basic (0), Competent (2), and Proficient (4).

Each section of the rubric had several elements describing the three grading categories. A student received points based on his/her ability to meet these elements. For example, in order for a student to receive a grade of Proficient (4) for the Overall Visual Appearance section of the rubric they were required to meet the following criteria:

- Appropriate and thematic graphic elements are used to make visual connections that contribute to the understanding of concepts, ideas and relationships
- Differences in type, size, and/or color are used well and consistently
- Navigation is seamless. It is always clear to the learner what all the pieces are and how to get to them

Any variation of these three elements resulted in a student receiving a grade of Basic (0) or Competent (2). The maximum number of points a student could score was 36

with nine sections and a maximum of four points per section. All three course professors implemented the similar grading procedures with their WebQuest submissions.

Findings

The professors recorded their scores on a hard copy of the grading rubric for each student, and these scores were compiled using SPSS 11.5 Statistical Software. Demographic data included the student's name, teacher certification status, and secondary or elementary education level. Scores from each of the nine sections of the grading rubric and the total score for each student were also recorded. As the courses did not include the same students, each class could not be compared. Of the 46 submissions, class 1 reported 16 scores (16 students), class 2 reported 12 scores (12 students), and class 3 reported 18 scores (10 students). Scores from class 1 and 2 were computed by incorporating two independent scorers to achieve an overall consensus score. Scores from class 3 included 8 repeated students, as there was a second rater for this course and 8 other scores were thrown out as the grading method was not consistent with the other classes. Of the 30 students involved in this study, 27 students were certified teachers, while 3 were not yet certified. Also, 14 students were secondary-level teachers, while 16 elementary level teachers. Only seven of the 30 students used Filamentality.

Statistical analysis compared scores on the grading rubric between elementary- (n=16) and secondary-level teachers (n=14) enrolled in all three courses. There was no significant difference between the mean score for elementary level teachers (29.56) and that for secondary level teachers (31.07). An Independent *t*-test was used to compare the means of elementary and secondary level teachers, yielding a calculated test statistic, $t=0.600$ ($p \leq .05$). Also investigated was level of significance using Filamentality, a low graphic tool used to develop WebQuests, which was utilized by a small number of the students in this study. Using an Independent *t*-Test to compare the means between those students who incorporated Filamentality (n=7) versus those who did not (n=23). The mean score for Filamentality users was 32.71 while that of non-Filamentality users was 29.52, a non-significant difference ($t=0.344$, $p \leq .05$). As the mean values were very similar, the difference in the n values for both categories may have had an impact on the level of significance of Filamentality users. Similarly, the significance of the mean score for certified versus non-certified teachers may have been affected by the number of students in each category. Certified teachers (n=27, mean=30.67) and non-certified teachers (n=3, mean=30.22) yielded a calculated test statistic, $t=0.926$ ($p \leq .05$) comparing these two means.

Discussion

The three major areas investigated in this study included the teaching level, Filamentality use, and certification status. Significant differences in mean scores in any of these three areas may potentially reveal the areas of concern for future research using WebQuests in social studies education. Using secondary and elementary-level teachers

in this study, there was no significant difference in mean scores reported between groups. Scores on the grading rubric were similar, indicating that elementary and secondary level teachers were able to understand the basic concepts of implementing a WebQuest. Using Filamentality versus creating a graphic intensive WebQuest project also did not reveal a significant finding among pre-service and in-service educators social studies education. The implication from this finding is that using a grading rubric to assess a WebQuest assignment may not be affected by high graphic or low graphic submissions. The quality of the WebQuest assignment may rely heavily upon the ability of the student to connect with the material in the project, not the integration of graphics. Further research in this area should address an in-depth analysis of WebQuest assignments designed using Filamentality versus graphic intensive WebQuests. As these assignments are incorporated by elementary and secondary students in social studies education, further investigation of this topic may provide pre-service and in-service teachers the ability to create better projects.

Teacher certification status versus non-teacher certification was the final area of investigation yielding no significant results. This finding reveals that both certified and non-certified teachers create similar quality WebQuest assignments using the grading rubric. These scores indicate that certification status does not play a significant role in whether a teacher can prepare a WebQuest. Similar to the other areas assessed in this study, the ability of pre-service and in-service teachers in social studies education to create content that captures the student's interest may be independent of their certification status.

Conclusions

Although the three major areas of this study including teaching level, Filamentality, and certification status, did not yield a statistically significant finding on mean total scores using a grading rubric, future research may reveal additional information about the development of WebQuests. Major themes identified by this study focused on content, the process, and creativity of a WebQuest assignment. All of the following sections of the grading rubric address content specific objectives within the WebQuest assignment: Connects Task to Academic Standards at Developmentally Appropriate Grade Level, Engaging Scenario and Tasks, Roles are Interesting and Create Dissonance. These areas within the grading rubric target content development by pre-service and in-service teachers in order to receive a "Proficient" grade. Connecting tasks to academic standards, engaging scenarios and tasks, and interesting roles are directed at preparing material that keeps the learner engaged with the content.

The following areas within the grading rubric focus on the process of completing a WebQuest assignment: Frames the Essential Question, Follows Inquiry Process, Relevant Sources at Appropriate Grade Level for Students and Quality of Resources. Framing the essential question, following the inquiry process, and providing relevant sources are all aspects of the process that a student must be able to understand in order to complete the WebQuest. The teacher must control the ability of the student to complete the various tasks within a WebQuest assignment before moving to another task or level.

The remaining sections of the grading rubric address the creative aspects of WebQuests: Overall Visual Appeal, Clarity of Evaluation Criteria, Promotes the Use of

Creativity. These sections provide the teacher with the flexibility to add various colors and graphics to appeal to capture the students' interest. From the results of this study, this may be the least important factor of the three major areas of the grading rubric. Although students may be initially drawn to an assignment based on the colors and graphic, the content and process are the areas of the WebQuest assignment that will maintain their interest. Further research may also include a more in-depth investigation of these three areas of the grading rubric and their impact on WebQuest development by pre-service and in-service teachers.

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Appendix A

WebQuest Evaluation Rubric

	Basic (0)	Competent (2)	Proficient (4)	Score
Frames the Essential Question	<ul style="list-style-type: none"> The question can be answered directly The focus of the question is on the lower levels of Bloom's Taxonomy of knowledge and comprehension The question has one obvious answer 	<ul style="list-style-type: none"> The question spans the lower levels of Bloom's Taxonomy of knowledge: comprehension and application The student is able to quickly reach a conclusion in response to the question Does not attempt to have students make judgment or evaluation 	<ul style="list-style-type: none"> The essential question scaffolds learning, spanning Bloom's Taxonomy The learner is encouraged to wonder The learner is encouraged to invent his/her own solution The essential question builds on prior knowledge Raises relevant question Question related to classroom curriculum 	#
Follows Inquiry Process	<ul style="list-style-type: none"> Involves searching for information not focused on the ideas in the question Asks questions Learns information on the topic 	<ul style="list-style-type: none"> Seeks or creates data that partially addresses the question Use bits and pieces of information States the conclusion 	<ul style="list-style-type: none"> Seeks or creates data that addresses the question. Asks additional questions Searches the Information (data) for patterns Finds regularities/trends in the information that address the relevant questions and draw conclusions Reflects on the adequacy of the conclusion in terms of the quality of the information and the question. 	#
Overall Visual Appeal	<ul style="list-style-type: none"> Only text Uses one layout Navigation depends on the "Back" button of the browser 	<ul style="list-style-type: none"> Graphic elements sometimes, but not always, contribute to the understanding of concepts, ideas and relationships There is some variation in type size, color, and layout There are a few places where the learner can get lost and not know where to go next 	<ul style="list-style-type: none"> Appropriate and thematic graphic elements are used to make visual connections that contribute to the understanding of concepts, ideas and relationships Differences in type, size, and/or color are used well and consistently Navigation is seamless. It is always clear to the learner what all the pieces are and how to get to them 	#
Connects Task to Academic Standards at development ally appropriate grade level	<ul style="list-style-type: none"> WebQuest. lists multiple items from standards that are peripherally connected to the topic Standards listed are not addressed by the WebQuest. 	<ul style="list-style-type: none"> WebQuest. is not interdisciplinary, no effort is made to connect disciplines Standards are related to the WebQuest. 	<ul style="list-style-type: none"> WebQuest. is interdisciplinary with clearly targeted standards Standards are directly correlated to the tasks. Standards are related to classroom curriculum 	#
Engaging	<ul style="list-style-type: none"> The scenario is one- 	<ul style="list-style-type: none"> The scenario is interesting 	<ul style="list-style-type: none"> The scenario and task are 	#

Scenario & Tasks	dimensional <ul style="list-style-type: none"> The task requires a student to research at the knowledge or comprehension level Assumes learner can plan his or her time without directions 	<ul style="list-style-type: none"> The tasks are partially defined; some background information is supplied for each role Directions are clear 	engaging for students and elicit thinking in learners that goes beyond rote comprehension <ul style="list-style-type: none"> The task provides sufficient background information to excite the interest of students The procedures are clearly outlined 	
Relevant sources at appropriate grade level for students and quality of resources	<ul style="list-style-type: none"> Links to sites and materials somewhat connected to the assignment Uses one source Interprets meaning from one source Limited information for students to analyze or interpret 	<ul style="list-style-type: none"> Information listed includes relevant and irrelevant materials Uses a limited number of sources Sites provide facts, but do not encourage reflection Some sites are not developmentally appropriate 	<ul style="list-style-type: none"> All information listed is relevant information Sources are differentiated for each role Places meaning of the problem in personal, social, or community perspectives Sources are at an appropriate reading level for students 	#
Roles are interesting and create dissonance	<ul style="list-style-type: none"> Students may create roles, but they are not defined Roles are general so action is guided by other factors Background information is the same for all characters; or there is one role in the WebQuest 	<ul style="list-style-type: none"> The characters are similar in belief or thought There is insufficient background information There are two or fewer roles The character is clearly "invented" and would not be involved in the scenario in the real world 	<ul style="list-style-type: none"> The WebQuest introduces characters who would interact with the information in the "real world" Uses several characters/roles that are clearly defined and unique. Characters have different points of view on the subject 	#
Clarity of Evaluation Criteria	<ul style="list-style-type: none"> A checklist of sections is provided without indicators of quality Teacher applies the rubric 	<ul style="list-style-type: none"> Criteria for success are partially described on a continuum of progress Students apply the rubric to their own work. 	<ul style="list-style-type: none"> Criteria for success are clearly stated in the form of a rubric for teacher assessment, student self-assessment, and peer assessment Criteria include qualitative as well as quantitative descriptors. The evaluation instrument clearly measures what students must know and be able to do to accomplish the task 	#
Promotes the Use of Creativity	<ul style="list-style-type: none"> Encourages or allows students to copy and paste from the Internet without discrimination Products demonstrate little connection to the question Products do not show reflection. 	<ul style="list-style-type: none"> Student would be able to demonstrate one clear approach to understanding the problem Does not ask students to draw conclusion 	<ul style="list-style-type: none"> Student would be able to generate multiple approaches of looking at the problem Student would be challenged to demonstrate different approaches. 	#
Total Score				#

This is a modified version of a WebQuest Rubric based on the original WebQuest rubric by Bernie Dodge. Modified first by Dennis Sunal and Valesca Dwyer, 2002
Modified further by the Hilarie Davis, 2/13/02 for the Re-Discovery Project